AMENDMENTS TO THE CLAIMS

Please amend Claims 19, 20, 25, 29, 40, 41, 66, 67, 99, and 100 as follows:

1. (Previously Presented) A method for stabilizing metals in a particulate material comprising the steps of:

(a) contacting a metal reagent with the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

(b) contacting a sulfur-containing compound with the particulate material; and

(c) agitating the particulate material to entrain oxygen in the particulate material, wherein the metal reagent is selected from the group consisting of metal based elements from Group 1B, Group 2B, Group 4B, Group 4A and combinations thereof of the Periodic Table of Elements.

2. (Original) A method according to claim 1 wherein the metals in the particulate material that are to be stabilized are selected from the group consisting of mercury, arsenic, lead, zinc, barium, cadmium, chromium, selenium, silver and mixtures thereof.

3. (Original) A method according to claim 1 wherein the particulate material has a mercury content of greater than about 260 ppm.

4. (Previously Presented) A method according to claim 1 wherein the particulate material is soil and further comprising the additional step of adding a dispersing agent to the soil.

5. (Original) A method according to claim 1 comprising the additional step of treating the metal reagent with an activator.

6. (Original) A method according to claim 1, comprising the additional step of adding an iron-containing compound to the particulate material to react with excess sulfides in the particulate material.

7. (Original) A method according to claim 1 wherein the sulfur-containing compound is a dimethylthiolcarbamate, diethylthiolcarbamate, sulfide, polysulfide or mixtures thereof.

8. (Canceled)

9. (Original) A method according to claim 1 wherein the metal reagent is selected from the group consisting of zinc, tin, copper, titanium, lead and mixtures thereof.

10. (Original) A method according to claim 1 wherein the metal reagent is tin.

11. (Original) A method according to claim 5 wherein the activator is a mineral containing acid.

12. (Original) A method according to claim 5 wherein the activator is a sulfur-containing acid.

13. (Original) A method according to claim 5 wherein the activator is selected from the group consisting of sulfamic acid, sulfamidic acid, sulfonic acid, sulfinic acid, sulfenic acid, and mixtures thereof.

14. (Original) A method according to claim 5 wherein the activator is sulfamic acid.

15. (Original) A method according to claim 6 wherein a pH level of the particulate material is in a range of approximately pH 4 to pH 8.

16. (Original) A method according to claim 15 wherein the pH level of the particulate material is raised following the addition of the sulfur-containing compound.

17. (Previously Presented) A method according to claim 16 wherein the pH level of the particulate material is approximately neutral following the addition of the iron-containing compound.

18. (Original) A method according to claim 1 wherein approximately 0.4 to 2.0 weight percent of the metal reagent is added per kilogram of particulate material.

19. (Currently Amended) A method according to claim 1 wherein the sulfur-containing compound is added in an amount ranging from about 1.0 mole to about 2.0 mole of sulfur-containing compound per mole of mercury [[to]]<u>for a metals concentration in the range of</u> about 300 ppm of metals to about 1000 ppm of metals.

20. (Currently Amended) A method according to claim 1 wherein the sulfur-containing compound is added in the an amount ranging from about 2.0 mole to about 3.0 mole of sulfur-containing compound per mole of mercury [[to]]<u>for a metals concentration in the range of</u> about 1000 ppm of metals to about 3000 ppm of metals.

21. (Original) A method according to claim 1 wherein the particulate material is selected from the group consisting of soil, sand, dirt, sludge, solid wastes and mixtures thereof.

22. (Original) A method according to claim 6 wherein the iron-containing compound is selected from the group consisting of elemental iron, ferric chloride, ferric sulfate, ferrous sulfate and mixtures thereof.

23. (Original) A method according to claim 4 wherein the dispersing agent is a surfactant.

24. (Original) A method according to claim 4 wherein the dispersing agent is a detergent.

25. (Currently Amended) A method for stabilizing metals in a particulate material comprising the steps of:

a) treating a metal reagent with an activator;

b) adding a dispersing agent to the particulate material;

c) adding a metal reagent to the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

d) adding a sulfur-containing compound to the particulate material;

e) agitating the particulate material to entrain oxygen in the particulate material;

f) adding an iron-containing compound to the particulate material to react with excess sulfides in the particulate material.

26. (Original) A method according to claim 25 wherein the metals in the particulate material that are to be stabilized are selected from the group consisting of mercury, arsenic, lead, zinc, barium, cadmium, chromium, selenium, silver and mixtures thereof.

27. (Original) A method according to claim 25 wherein the particulate material has a mercury content of greater than about 260 ppm.

28. (Original) A method according to claim 25 wherein the sulfur-containing compound is calcium sulfate, dithiolcarbomate, dimethylcarbomate, sulfide, polysulfide or and mixtures thereof.

29. (Currently Amended) A method according to claim 25 wherein the metal reagent is selected from the group consisting of metal based elements from Group 1B, Group 2B, Group 4B, Group 4A and combinations thereof of [[a]]the Periodic Table of Elements.

30. (Original) A method according to claim 25 wherein the metal reagent is selected from the group consisting of zinc, tin, copper, titanium, lead and mixtures thereof.

31. (Original) A method according to claim 25 wherein the metal reagent is tin.

32. (Original) A method according to claim 25 wherein the activator is a mineral containing acid.

33. (Original) A method according to claim 25 wherein the activator is a sulfur-containing acid.

34. (Original) A method according to claim 25 wherein the activator is selected from the group consisting of sulfamic acid, sulfamidic acid, sulfonic acid, sulfinic acid, sulfenic acid and mixtures thereof

35. (Original) A method according to claim 25 wherein the activator is sulfamic acid.

36. (Original) A method according to claim 25 wherein a pH level of the particulate material is in a range of approximately pH 4 to pH 8.

37. (Original) A method according to claim 36 wherein the pH level of the particulate material is raised following the addition of the sulfur-containing compound.

38. (Original) A method according to claim 37 wherein the pH level of the particulate material is approximately neutral following the addition of the iron-containing compound.

39. (Original) A method according to claim 25 wherein approximately 0.4 to 2.0 weight percent of the metal reagent is added per kilogram of particulate material.

40. (Currently Amended) A method according to claim 25 wherein the sulfur-containing compound is added in an amount ranging from about 1.0 mole to about 2.0 mole of sulfur-containing compound per mole of mercury [[to]]<u>for a metals concentration in the range of</u> about 300 ppm of metals to about 1000 ppm of metals.

41. (Currently Amended) A method according to claim 25 wherein the sulfur-containing compound is added in the an amount ranging from about 2.0 mole to about 3.0 mol of sulfur-containing compound per mole of mercury [[to]]<u>for a metals concentration in the range of</u> about 1000 ppm of metals to about 5000 ppm of metals.

42. (Original) A method according to claim 25 wherein the particulate material is selected from the group consisting of soil, sand, dirt, sludge, solid wastes and mixtures thereof.

43. (Original) A method according to claim 25 wherein the iron-containing compound is selected from the group consisting of elemental iron, ferric sulfate, ferric chloride, ferrous sulfate and mixtures thereof.

44. (Original) A method according to claim 25 wherein the dispersing agent is a surfactant.

45. (Original) A method according to claim 25 wherein the dispersing agent is a detergent.

46-64. (Canceled)

65. (Original) A method for stabilizing metals in a particulate compound comprising the steps of:

(a) adding a metal reagent to the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

(b) adding a sulfur-containing compound to the particulate material;

(c) impregnating the particulate material with oxygen;

(d) agitating the particulate material to entrain oxygen in the particulate material; and,

(e) adding an iron-containing compound to the particulate to remove excess sulfides from the particulate material.

66. (Currently Amended) A method for stabilizing metals in a particulate compound comprising the steps of:

(a) adding a metal reagent to the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

[[(a)]](b) adding a sulfur-containing compound to the particulate material;

[[(b)]](c) agitating the particulate material to entrain oxygen in the particulate material; and,

[[(c)]](d) adding an iron-containing compound to the particulate to remove excess sulfides from the particulate material.

67. (Currently Amended) A method for stabilizing metals in a particulate material comprising the steps of:

(a) adding a dispersing agent to the particulate material;

(b) adding a metal reagent to the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

(c) adding a sulfur-containing compound to the particulate material;

(d) agitating the particulate material to entrain oxygen in the particulate material; and,

(e) adding an iron-containing compound to the particulate material to remove excess sulfides from the particulate material.

68. (Previously Presented) A method for stabilizing metals in a particulate material comprising the steps of:

(a) adding a metal reagent to the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

(b) adding a sulfur-containing compound to the particulate material; and,

(c) impregnating the particulate material with oxygen, wherein the metal reagent is selected from the group consisting of metal based elements from Group 1B, Group 2B, Group 4B, Group 4A and combinations thereof of a Periodic Table of Elements.

69-70. (Canceled)

71. (Previously Presented) A method for stabilizing metals in a particulate material comprising the steps of:

(a) contacting a metal reagent with the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

(b) contacting a sulfur-containing compound with the particulate material;

(c) agitating the particulate material to entrain oxygen in the particulate material; and

(d) adding an iron-containing compound to the particulate material to react with excess sulfides in the particulate material.

72. (Previously Presented) A method according to claim 71 wherein a pH level of the particulate material is in a range of approximately pH 4 to pH 8.

73. (Previously Presented) A method according to claim 72 wherein the pH level of the particulate material is raised following the addition of the sulfur-containing compound.

74. (Previously Presented) A method according to claim 71 wherein the pH level of the particulate material is approximately neutral following the addition of the iron-containing compound.

75. (Previously Presented) A method according to claim 71 wherein the iron-containing compound is selected from the group consisting of elemental iron, ferric chloride, ferric sulfate, ferrous sulfate and mixtures thereof.

76. (Previously Presented) A method for stabilizing metals in a particulate material comprising the steps of:

(a) contacting a metal reagent with the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

(b) contacting a sulfur-containing compound with the particulate material; and

(c) agitating the particulate material to entrain oxygen in the particulate material, wherein the metal reagent is selected from the group consisting of zinc, tin, copper, titanium, lead and mixtures thereof.

77. (Previously Presented) A method for stabilizing metals in a particulate material comprising the steps of:

(a) contacting a metal reagent with the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

(b) contacting a sulfur-containing compound with the particulate material; and

(c) agitating the particulate material to entrain oxygen in the particulate material, wherein the metal reagent is tin.

78. (Previously Presented) A method for stabilizing metals in a particulate material comprising the steps of:

(a) contacting a metal reagent with the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

(b) contacting a sulfur-containing compound with the particulate material;

(c) agitating the particulate material to entrain oxygen in the particulate material; and

(d) treating the metal reagent with an activator, wherein the activator is selected from the group consisting of sulfamic acid, sulfamidic acid, sulfonic acid, sulfinic acid, sulfenic acid, and mixtures thereof.

79. (Previously Presented) A method for stabilizing metals in a particulate material comprising the steps of:

(a) contacting a metal reagent with the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

(b) contacting a sulfur-containing compound with the particulate material;

(c) agitating the particulate material to entrain oxygen in the particulate material; and

(d) treating the metal reagent with an activator, wherein the activator is sulfamic acid.

80. (Previously Presented) A method for stabilizing metals in a particulate material comprising the steps of:

(a) contacting a metal reagent with the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

(b) contacting a sulfur-containing compound with the particulate material;

(c) agitating the particulate material to entrain oxygen in the particulate material, wherein the particulate material is soil; and

(d) adding a dispersing agent to the soil wherein the dispersing agent is a surfactant.

81. (Previously Presented) A method for stabilizing metals in a particulate material comprising the steps of:

(a) contacting a metal reagent with the particulate material, said particulate material having a solids content of greater than about seventy-five weight percent;

(b) contacting a sulfur-containing compound with the particulate material;

(c) agitating the particulate material to entrain oxygen in the particulate material, wherein the particulate material is soil; and

(d) adding a dispersing agent to the soil, wherein the dispersing agent is a detergent.

82. (Previously Presented) A method according to claim 68, wherein the particulate material is impregnated with oxygen by adding an oxygen-containing compound to the particulate material.

83. (Previously Presented) A method according to claim 68 wherein the metals in the particulate material that are to be stabilized are selected from the group consisting of mercury, arsenic, lead, zinc, barium, cadmium, chromium, selenium, silver and mixtures thereof.

84. (Previously Presented) A method according to claim 68 wherein the particulate material has a mercury content of greater than about 260 ppm.

85. (Previously Presented) A method according to claim 68 wherein the particulate material is soil and further comprising the additional step of adding a dispersing agent to the soil.

86. (Previously Presented) A method according to claim 68 comprising the additional step of treating the metal reagent with an activator.

87. (Previously Presented) A method according to claim 68, comprising the additional step of adding an iron-containing compound to the particulate material to react with excess sulfides in the particulate material.

88. (Previously Presented) A method according to claim 68 wherein the sulfur-containing compound is a dimethylthiolcarbamate, diethylthiolcarbamate, sulfide, polysulfide or mixtures thereof.

89. (Previously Presented) A method according to claim 68 wherein the metal reagent is selected from the group consisting of zinc, tin, copper, titanium, lead and mixtures thereof.

90. (Previously Presented) A method according to claim 68 wherein the metal reagent is tin.

91. (Previously Presented) A method according to claim 86 wherein the activator is a mineral containing acid.

92. (Previously Presented) A method according to claim 86 wherein the activator is a sulfur-containing acid.

93. (Previously Presented) A method according to claim 86 wherein the activator is selected from the group consisting of sulfamic acid, sulfamidic acid, sulfonic acid, sulfinic acid, sulfenic acid, and mixtures thereof.

94. (Previously Presented) A method according to claim 86 wherein the activator is sulfamic acid.

95. (Previously Presented) A method according to claim 68 wherein a pH level of the particulate material is in a range of approximately pH 4 to pH 8.

96. (Previously Presented) A method according to claim 95 wherein the pH level of the particulate material is raised following the addition of the sulfur-containing compound.

97. (Currently Amended) A method according to claim 87 wherein the pH level of the particulate material is approximately neutral following the addition of the iron-containing compound.

98. (Previously Presented) A method according to claim 68 wherein approximately 0.4 to 2.0 weight percent of the metal reagent is added per kilogram of particulate material.

99. (Currently Amended) A method according to claim 68 wherein the sulfur-containing compound is added in an amount ranging from about 1.0 mole to about 2.0 mole of sulfur-containing compound per mole of mercury [[to]]for a metals concentration in the range of about 300 ppm of metals to about 1000 ppm of metals.

100. (Currently Amended) A method according to claim 68 wherein the sulfur-containing compound is added in the an amount ranging from about 2.0 mole to about 3.0 mole of sulfur-containing compound per mole of mercury [[to]]for a metals concentration in the range of about 1000 ppm of metals to about 3000 ppm of metals.

101. (Previously Presented) A method according to claim 68 wherein the particulate material is selected from the group consisting of soil, sand, dirt, sludge, solid wastes and mixtures thereof.

102. (Previously Presented) A method according to claim 87 wherein the iron-containing compound is selected from the group consisting of elemental iron, ferric chloride, ferric sulfate, ferrous sulfate and mixtures thereof.

103. (Previously Presented) A method according to claim 85 wherein the dispersing agent is a surfactant.

104. (Previously Presented) A method according to claim 85 wherein the dispersing agent is a detergent.